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Distributional Consequences of Technology, Trade Globalisation and Financialisation in the US

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Abstract: In this paper, we examine the dynamic contributions of technology, trade globalisation, and financialisation to the functional-personal income distribution nexus. We estimate a two-equation model for the income distribution in the US over the 1968-2014 period. We show that the labour share is affected negatively by personal inequality and trade, and it is also determined by tax and technology-related variables. In turn, income inequality is fuelled by the falling labour share and increasing financial assets and financial payments. Our empirical model accounts for 67 per cent of the fall in the labour share and 85 per cent of the rise in income inequality. Using counterfactual simulations, we show that the net distributional impact of technology and trade globalisation is scarce; in contrast, our indicators of the financialisation process are prominent drivers of the falling labour share and rising personal inequality. In the post-Great Recession years of tense socio-economic conditions, we claim that the scope of financial institutions and corporate strategies needs to be revised.

I INTRODUCTION

For the last decades, the personal and functional distributions of income have followed divergent trends in the US. While increasing inequality in personal income distribution has been pushing the Gini index relentlessly upwards, the evolution in the functional distribution of income has been characterised by a

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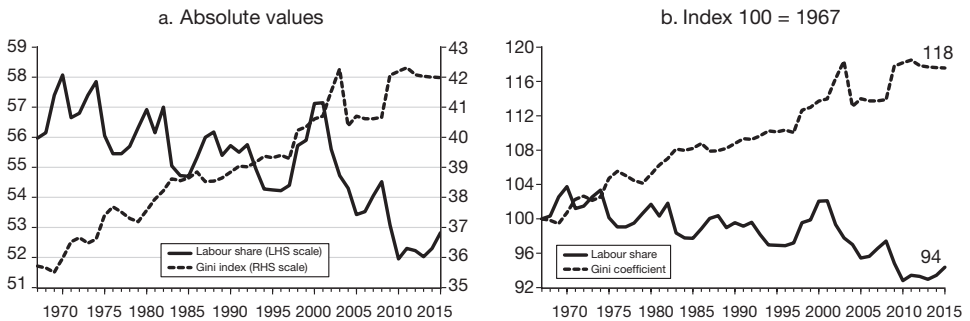
downward trend in the labour income share (Figure 1).[1] Since the labour share can also be envisaged as the wage-productivity gap, its downward trend is a mere reflection of wages lagging further behind labour productivity.

The aim of this paper is to identify the driving forces of the wage-productivity gap and inequality and evaluate their consequences for the functional-personal income distribution nexus. We contribute to the literature by simultaneously modelling these two measures of income distribution allowing for interactions between them and their drivers. This is what we call the functional-personal income distribution nexus. We document the major role played by two indicators of the financialisation process in determining these trends.

Figure 1: Labour Income Share and Income Inequality in the US



Source: Bureau of Labor Statistics (BLS) for the labour share; Estimated Household Income Inequality (EHII) dataset developed by the University of Texas Inequality Project (UTIP) for the Gini index.
Note: All-worker non-farm business sector labour share and Gini index for household income inequality.

As shown in Checchi and García-Peñalosa (2010) and Karanassou and Sala (2012), the falling labour share is an important channel increasing personal income inequality and supporting employment. The latter, in particular, evaluate the inequality-employment sensitivity ratio, which can be seen as a barometer of the two-sided role of the falling labour share in economic activity: wider wage gaps are associated with lower unit labour costs that boost employment and, at the same time, they further lead to the squeeze of the middle class by overloading its socio-economic burden.[2] In effect, the employment support of the falling labour share

[1] The rise in income inequality has been documented by Wolff and Zacharias (2006) and Galbraith (2012). Evidence for the declining labour share can be found in, e.g., Karabarbounis and Neiman (2014), Autor *et al.* (2017), Dünhaupt (2017), and Stockhammer (2017).

[2] The negative relation between the labour share and inequality is also documented by Checchi and García-Peñalosa (2010) in their regression of the Gini statistics. Giovannoni (2010) argues that the high-quality datasets by the UTIP-UNIDO and the OECD-SULCI clearly show a strong link between the lower wage share and higher inequality since 1980.

since the 1970s has tended to "sweeten" its distributional impact and diverted attention away from the issue of increasing inequality.

While our work is in accordance with the inverse relation between real wages and employment, it refutes the conventional wisdom that the labour income share is neutral to the performance of macro-labour markets. It may be tantalising to place the finding of an inverse relation between the wage-productivity gap and employment along the lines of a profit-led growth model. However, in the light of the financial developments and high personal borrowing of recent decades, the scenarios of wage-led and profit-led growth/demand need to be reassessed.[3]

This paper shows that the central determinants of the labour share and the Gini coefficient are technology-related variables (such as the capital-output ratio, TFP, or the depreciation rate), trade (or the degree of openness), and financial assets and payments. These variables are regarded as reasonably good proxies of the critical macroeconomic phenomena of technological progress, trade globalisation, and financialisation. The latter refers to the engagement of the non-financial sector (global/oligopolistic industries) in financial markets. We follow González and Sala (2014) and Orhangazi (2008) and use financialisation "to designate the changes that have taken place in the relationship between the non-financial corporate sector and financial markets" (Orhangazi, 2008, p. 864).[4]

Estimating a two-equation system over the 1968-2014 period, we find that (i) the functional income distribution is mainly driven by technology and trade factors, together with income inequality, and (ii) inequality is in turn fuelled by the falling labour share and increasing financial assets and payments. Put differently, while there is a direct effect of financialisation on the personal income distribution, technology and globalisation affect inequality indirectly via the labour share.

For the labour share, our empirical model is based on the seminal work by Bentolila and Saint-Paul (2003) and the dense subsequent mainstream literature.[5] There is, however, a critical view that sees the falling labour share as reflecting the

[3] In their thorough analytical exposition, Bhaduri and Marglin (1990) associated the negative relation between real wages and employment with a profit-led expansion obtained by profit maximisation or, alternatively, "when aggregate demand is higher owing to the strong response of investment to the higher profit margin/share brought about by a lower real wage rate" (*ibid*., p.379). Projecting on the same argument, the reverse case of a wage-led expansion can be derived: employment (output) contracts at a lower real wage due to the relatively weak response of investment to the higher profit margin/share.

[4] The term financialisation points to the growing dominance of finance in the modern economy and has led to different definitions (see Stockhammer, 2004; Orhangazi, 2008; Milberg and Winkler, 2010a; González and Sala, 2014; and Dünhaupt, 2017, among others). In Section 4.1, we provide details on the different indicators employed in this work.

[5] We refer to the technological nature of the capital-output ratio below, but two remarks are worth making. First, we acknowledge the capital controversy between the socio-political Marxist wide view of capital, and the restricted neoclassical concept of capital embedded in the aseptic production function. Second, to be able to rise our point on the relevance of financialisation in explaining inequality, we stick to the otherwise standard framework and control for the capital-output ratio to allow a direct comparison between our results and those in related literature.

increasing degree of monopoly power (Dünhaupt, 2017). In addition, Dünhaupt (2013) provides a comprehensive survey on the determinants of the labour share when examined from the perspective of the classical economists, Marx, and the neoclassical economists, Keynes and Kalecki. With regard to income inequality, we take a macroeconomic perspective inspired in the work by Checchi and García-Peñalosa (2010), with the inclusion of determinants that reflect the financialisation process (see Epstein, 2005).

Our aim is to challenge the mainstream explanation that focuses on technology and globalisation as major drivers of the falling labour share when the financialisation process is also taken into account in a context in which: (i) the functional income distribution and personal inequality are modelled together; and (ii) cross-equation feedback effects are allowed so that the sets of explanatory variables in each empirical model have direct and indirect effects on the endogenous variables.

Based on the statistical significance and adequacy of our empirical model, we measure its economic significance by evaluating the distributional consequences of technology and trade, financial assets and payments, and taxes. To this end, we carry out counterfactual simulations that answer the question: How have the paths of these factors contributed to the evolution of the labour share and the Gini index? The results are revealing. Taking a long-term perspective starting in the 1970s, we find net effects from technology and globalisation that account for less than 10 per cent of the changes in these two forms of inequality. On the contrary, financialisation accounts for a fall of 7 percentage points in the labour share, and a rise of 4.8 points in the Gini index. This is the outcome of a two-fold transmission channel, which may have different effects in specific periods. One is the ratio of financial assets over total assets, which has tended to grow structurally since the 1980s to stabilise recently; the other one is financial payments, with a volatile behaviour.[6] We claim that these results should help rethinking the way financial institutions operate in the economy and the biased design of corporate strategies towards intangible rather than productive investments.

Section II presents the functional and personal income distributions, and comments on their trends since the 1980s. Section III outlines the labour share and Gini coefficient relations of our empirical model, while Section IV presents the estimation results. Having identified technology and trade globalisation, financialisation and taxes as major driving forces of the labour share and inequality, Section V evaluates their distributional consequences. Section VI concludes.

[6] Although for the sake of brevity we do not show results per decade, we find that when both indicators grow, as in the 1980s, the effects on income inequality are substantial. If, however, payments fall sufficiently in bad times, weakening financialisation may relieve inequality as it did in the early 2000s due to the stabilisation of financial assets and the fall in financial payments as a consequence of the downturn in the early 2000s and the Global Financial Crisis (GFC). These complementary findings align with those in Galbraith (2012, p. 290): "in the wake of crisis, as we observe directly in the United States (...) the financial sector shrinks and inequalities tend modestly to decline".

II INCOME DISTRIBUTION

2.1 Functional Income Distribution

The labour income share is the wage share (and adjustments made for the self-employed), which through the wage-productivity relationship can be seen as the wage gap (ILO, 2015):

$$labour\ share \equiv \frac{wages}{GDP} = \frac{wages/employees}{GDP/employees} = \frac{average\ wage}{productivity} \equiv wage\ gap \quad (1)$$

Hence, the fact that the labour share has been trending downwards worldwide in the last decades implies that the wage gap is widening. This is generating great concern on different grounds (ILO, 2015; OECD, 2015; IMF, 2017). First, because it implies that growth does not translate sufficiently into workers' income, which is likely to hamper economic growth and contribute to secular stagnation. Second, because it increases personal income inequality, since capital income is more concentrated than labour income. Third, because it increases social discontent and undermines the support to the political and economic system (Stiglitz, 2002).

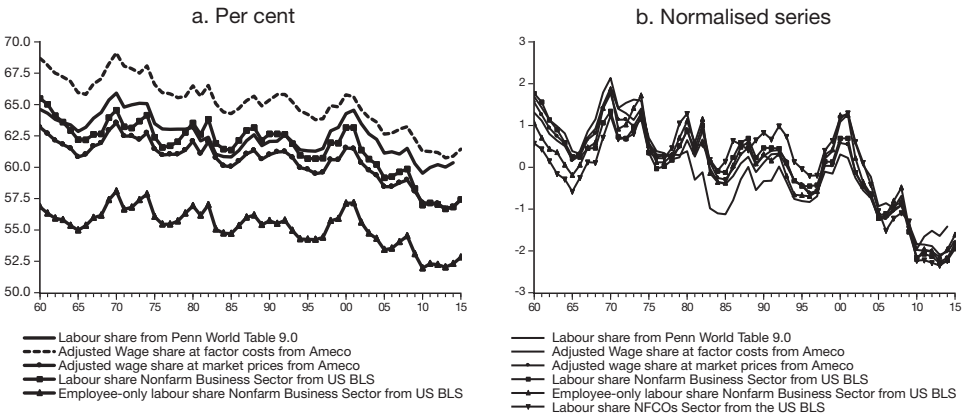
2.1.1 Measurement issues

The measurement of the labour share is surrounded with issues related to the use of deflators (wages can be deflated by the CPI index or the GDP deflator); the evaluation of GDP at factor costs or market prices; the incidence of depreciation (through its effects on the valuation of capital and, thus, on the capital share); the inclusion, or not, of self-employment rents; the measurement of ideas (Koh *et al.*, 2016); or the fact that a producer or a consumer perspective may be taken (Cho *et al.*, 2017).

Another important issue has to do with the object of measurement. The Penn World Table (PWT) 9.0 and the European Commission Ameco database supply information for the whole economy. As shown in Figure 2a, the adjusted wage share at factor costs from the Ameco database is the largest (given that workers' income in the numerator includes self-employment rents, while total income in the denominator has been diminished by indirect taxation with respect to total income at market prices). Both the series from the PWT 9.0 and the labour share in the non-farm business sector evolve within the Ameco database series (at factor costs and market prices).

To avoid noise from compositional changes in dependent and self-employment, we have considered the employee-only labour share of the non-farm business sector, supplied by the US BLS (Giandrea and Sprague, 2017). This covers 75 per cent of the US economy and excludes general government, non-profit institutions, private

Figure 2: US Labour Income Shares



Sources: Penn World Table 9.0, European Commission Ameco Database, and BLS.

households, the Armed Forces, and farms. As shown in Figure 2b, the evolution of our selected series follows the general downward trend.[7]

Whichever measure is used, Figure 2 depicts a slow fall in the labour share that accelerates in the early 2000s. Milberg and Schöller (2009) note that the labour share has not fallen as much as in other countries "partly due to the fact that the large levels of CEO compensation in the US, including stock options, are officially accounted in labour income" (Milberg and Schöller, 2009, p. 20).

2.1.2 Drivers

The drivers of the falling labour share have recently received great attention. A brief classification can be sketched around three main sets of factors:

1. Technology. Technological progress may affect capital intensity and influence the labour share through capital-labour substitution (Alvarez–Cuadrado *et al.*, 2015) or the fall in the prices of investment goods relative to consumption goods (Karabarbounis and Neiman, 2014). It may also bias the demand of skilled and non-skilled workers and affect the percentage of income that compensates the labour factor (Arpaia *et al.*, 2009). And it may also create accounting problems. For example if technology accelerates the rate of

[7] In the OECD definition of the Labor Income Share (or Real Unit Labor Cost, as they explicitly say) we read that "the total labour costs measure relates to compensation of employees adjusted for the self-employed and thus essentially relates to labour income". It is further acknowledged that this adjustment "assumes that labour compensation is equivalent for the self-employed and employees of businesses". We should also point out that IMF (2007) distinguishes the income share of employees – the ratio of employees' labour compensation to value added – from the income share of labour, which is the share of labour compensation of employees and "non-employee" workers in value added.

depreciation and inflates GDP in gross terms, thus reducing the labour share (Bridgman, 2014; Cho *et al.*, 2017); or by accruing the stock of ideas (i.e. the intangible capital stock), which is not taken into account in official statistics (Koh *et al.*, 2016).

2. Globalisation and market deregulation, which is typically associated with a lower labour share. Globalisation, which has been facilitated by technological progress, exerts direct and indirect influence on the labour share. Direct through trade, the spread of offshoring practices (Milberg and Winkler, 2010a, 2010b; Elsby *et al.*, 2013), and participation in global value chains (IMF, 2017). Indirect through market deregulation, which has caused welfare state retrenchment and a falling bargaining power of labour – see Rodrik's (1997) conjecture and Stockhammer (2017) for a survey on related literature.

   As a by-product of technological progress and globalisation, a new firm-level perspective has recently emerged. Autor *et al.* (2017) show that selected "superstar firms" are gaining very large shares of the market, and these are precisely firms with very high profits and a low share of labour over their value added. In turn, Kehrig and Vincent (2017) focus on the important reallocation of production towards "hyperproductive firms", which they claim are driving the aggregate labour share down in the US. This view is completed in De Loecker *et al.* (2020) who uncover a steady rise in aggregate firms' mark-ups since 1980, driven by few firms with very high mark-ups.

3. Financialisation. Although widely studied in recent years, this phenomenon has only recently been directly connected to the falling trend in the labour share.[8] Dünhaupt (2017) and Stockhammer (2017) document both a strong negative influence arising from financial payments in the first case (interests and dividends), and from financial globalisation in the second (assets and liabilities over GDP). In turn, González and Trivín (2017) focus on the increasing trend in asset prices, and show that the rising path in Tobin's Q (and hence in corporate financial wealth) has also been detrimental to the labour income share.

   Regarding financialisation, one aspect that is still neglected in the literature is its influence on the personal income distribution. This should come as no surprise since personal income distribution is in general studied by taking a microeconomic perspective. The exception is the work by Jacobson and Occhino (2012) who look, as we do, at the interaction between the declining share of income and rising inequality. They decompose the Gini index as the weighted average of the concentration indexes of labour and capital income, with the weights equal to the two income shares. In this way they are able to infer the Gini response to a 1 per cent decrease in the labour share, which they

[8] For example, it was connected to offshoring (Milberg and Winkler, 2010a), and offshoring was in turn connected to the labour share (Milberg and Winkler, 2010b), but no direct influence was studied.

place in the range of 0.15-0.33 per cent increase. The drivers of such interactions are however ignored.

2.2 Personal Income Distribution

From the trauma of the stagflating 1970s and the ensuing deregulation starting in the 1980s, to the roaring 1990s and up to the great moderation of the early 2000s, the pillars of conventional wisdom in economic policy were established on the premises of low inflation, reasonably good and sustainable growth, and relatively low unemployment. Issues of inequality and distribution had been ostracised from the analysis of economic affairs as it was thought that they could be trivially resolved under the holy trinity of the above economic outcomes.

In the midst of the worst economic crisis since the 1930s, the alarming rise in unemployment and the significant numbers of foreclosures that sparked the protest against the rich-poor divide, the distribution issue[9] resurfaced in the political scene after its long absence from the lexicon of mainstream economists.

Figure 1 shows that the Gini coefficient increased by close to 20 per cent over the 1967-2015 period (from 35.7 in 1967 to 42.0 in 2015). Given that our summary measure of the personal income distribution is the Gini coefficient, it is worth highlighting its economic substance. In particular, a more intuitive interpretation than the standard geometric one[10] is given by Shorrocks (2005), where the Gini coefficient is portrayed as the division of a "pie" into two unequal shares. For example, a Gini value of 0.40 is obtained from the division of an aggregate economic pie worth $1 into 90c and 10c. Presenting inequality as a "2-way division of a pie in which one person gets nine times the other is a powerful way of capturing the extent of income differences". Since the "fair" share in a 2-way division is 0.50, the Gini value of 0.40 represents the excess share of the richest person (Gini = 0.90-0.50).

[9] The study of Burkhauser et al. (2012a) is particularly informative about the differences in estimated inequality trends that can arise from differences in the definition of income (and the way its distribution is summarised) or from differences in the data sources. In turn, Burkhauser et al. (2012b) argue that the conclusions of the research on income and its distribution rely upon the income definition; i.e. on whether income is defined as pre-tax, pre-transfer tax unit cash (market) income or post-tax, post-transfer, size-adjusted household cash income. "So which income series is superior? This depends on the research question. For researchers interested in how middle class Americans are compensated for their time in the labor market, for example, it is more appropriate to use pre-tax, pre-transfer (market) income ... However, for those interested in the overall economic resources available to individuals, it is more appropriate to consider income defined as broadly as possible" (*ibid*., p.29-30). See Section 4.1 for a detailed description of the data used in this study.

[10] The typical interpretation of the Gini index is through the geometry of a Lorenz diagram plotting the cumulative population shares, from the poorest to the richest, against their cumulative income shares. It is the area between the Lorenz curve and the diagonal (45°) line as a ratio of the area below the diagonal (e.g. see Brewer et al., 2006, p.68). As the value of the Gini statistic increases from zero to one, the more unequal the income distribution becomes.

It is also worthwhile to point out some dramatic results on the top end of the personal distribution spectrum that have dominated the debate in recent years. The graphic evidence in Figures 1 and 3 shows that, since the late 1970s, income inequality has evolved in terms of an upward "trend" rather than "episodes" of falling/increasing inequality. In 2015, the top 1 per cent appropriated 22.0 per cent of the national income amounting to an increase of 220 per cent since 1960, most of it arising after 1980. Seen from the other side of the spectrum, the decreasing income shares of the bottom 99 per cent reflect the continuing squeeze of the middle classes since the 1980s.

As the increase in the share of the top percentile has been accompanied by the exceptional growth in top executives' pay relative to the salaries of employees, the issue of whether the so called "working rich"[11] have replaced top capital owners (the "rentiers") at the top of the economic ladder is open to debate. For example, Wolff and Zacharias (2006) do not support this issue, whereas Piketty and Saez (2006) argue in its favour.

Interestingly, the *Financial Times* (2010, February 3) reported that:

> *A packed session at the World Economic Forum in Davos...addressed the issue of executive compensation and the huge rise in the pay gap between chief executives and ordinary workers in their organisations. ...The best-paid person in a US company was paid about 40 times that of the worst-paid person a generation ago. Now the multiple is about 300. ...Asked whether the reason was that management had improved hugely; executives were underpaid in the past; their jobs were more onerous today, or whether executives had collectively exploited market power to raise their salaries, all of the members of the panel agreed that the last possibility was closest to the truth.*

Apparently, the personal income distribution theme was forced to enter (for the first time) in the agenda of the World Economic Forum in Davos 2012, where the "priority" of tackling growing inequality generated heated discussions (see the reports by BBC on 27 January 2012, Bloomberg Businessweek 31 January 2012, and others).

III MODELLING THE DISTRIBUTIONS

In view of the points raised above it is essential that we scrutinise further the income distribution network. Stockhammer (2017, p. 29) correctly writes that:

[11] "*Forbes* popularised this term. However, the magazine used it in the sense that the wealthiest Americans hold jobs rather than in the sense that the wealthiest depend mainly on labour income as their chief source of income". (Wolff and Zacharias, 2006, p.12).

Globalisation ought to have decreased the market power by means of the entrance of new competitors. At the same time, it has increased the bargaining power of firms vis-a-vis labour.

In other words, although globalisation should have increased the degree of competition in both the labour and product markets, it has mainly enhanced labour market reforms affecting the rules of collective bargaining, trade union power, minimum wages, and employment protection legislation. The mechanism of such reforms is well known and has been examined theoretically through efficiency wage and collective bargaining models. The point we would like to raise is that the expectation from globalisation to move markets towards perfect competition cannot materialise in the presence of the growing power of monopolies/oligopolies in the neoliberal globalised markets (Autor *et al.*, 2017; Kehrig and Vincent, 2017; De Loecker *et al.*, 2020).

3.1 Labour Share Equation

We model the functional income distribution using a log-linear equation for the labour share,:

$$ls_t = c^L + \sum_{j=1}^{J} \alpha_j^L ls_{t-j} + \sum_{j=1}^{J} \beta_j^L gini_{t-j} + \sum_{j=1}^{J} \gamma_j^L \left(\frac{k_{t-j}^{pr}}{y_{t-j}}\right) + \sum_{j=1}^{J} \delta_j^L tr_{t-j} + \sum_{j=1}^{J} \lambda_j^L \boldsymbol{X}_{t-j}^L + \varepsilon_{1t} \quad (2)$$

where $\frac{k_t^{pr}}{y_t}$ denotes capital intensity (with just private capital stock considered, so as to be consistent with the labour share for the non-farm business sector); tr_t denotes trade, and $\boldsymbol{X}_t^L$ contains other control variables (for example, tfp_t which proxies technology). Precise definitions are given in Table 1. The α's, β's, γ's, δ's and λ's are parameters to be estimated, with superscript L referring to the labour share Equation (2), and ε_{1t} being a strict white noise error term. The autoregressive element in specification (2), typical in dynamic time series equations, controls for the empirical relevance of labour adjustment costs in the model.

With respect to existing literature, the novelty in Model (2) is the presence of the Gini coefficient. Checchi and García-Peñalosa (2010) develop a model to examine the determinants of wage dispersion, the labour share and the personal distribution of income under the premises that the three forms of inequality are closely related and potentially affect each other. In this context, a critical channel by which the Gini coefficient affects the labour share is job polarisation resulting from losses of jobs in middle-skill occupations (see IMF, 2017, p.123).

Capital intensity (i.e. the capital-output ratio) was introduced as a major factor in the labour share equation by Bentolila and Saint-Paul (2003). A positive elasticity between the two variables indicates that labour and capital are substitutes (so that the elasticity of substitution between capital and labour, σ, is lower than 1), while a negative elasticity implies they are complements (so σ is greater than 1). This value corresponds to the slope of the so-called share-capital schedule, which has become a popular framework. Milberg and Winkler (2010a; 2010b), Checchi and García-Peñalosa (2010), Karabarbounis and Neiman (2014) and Koh *et al.* (2016) have used it. A common finding for the US when using this framework is the complementarity between capital and labour, a result that is controversial (Chirinko and Mallick, 2014). Although it is tempting (as in this debate) to interpret capital intensity as a variable driven by technology, Stockhammer (2013, p.5) is right to note that, from a Keynesian perspective, capital accumulation will be driven to some extent by changes in animal spirits that are not primarily related to technology.

Together with the capital-output ratio, technology enters as a control variable to capture the impact of biased technological change. As shown by Bentolila and Saint-Paul (2003), total factor productivity (TFP) coming out with the same sign as capital intensity is an indication of capital augmenting technology.

Another major factor in the wage gap evolution is trade (or the degree of openness), which is commonly interpreted as a proxy for some key aspects of the globalisation process (e.g. IMF, 2007). Contrary to the prediction of Heckscher-Ohlin theory, it is widely accepted in the empirical literature that trade openness exerts a negative influence on the labour share.

Financialisation is the final key factor in the unravelling of the distributional nexus. Our point of view is that, while it affects directly the personal income distribution, which is the focus of our analysis, it also enters indirectly the functional income distribution via the capital intensity factor. Following the reasoning in the literature on the negative effect of financialisation on real investment (e.g. Orhangazi, 2008), it can be argued that capital accumulation is the transmission channel of financialisation to the labour market (González and Sala, 2014).

3.2 Gini Coefficient Equation

As in Karanassou and Sala (2012), we examine the inequality factors with a log-linear model along the lines of the reduced form inequality equation in Checchi and García-Peñalosa (2010). Our autoregressive distributed lag (ARDL) model for income inequality has the following form:

$$gini_t = c^G + \sum_{j=1}^{J} \alpha_j^G \, gini_{t-j} + \sum_{j=0}^{J} \beta_j^G \, ls_{t-j} + \sum_{j=0}^{J} \gamma_j^G \, fin_{t-j}^a + \sum_{j=0}^{J} \delta_j^G \, fin_{t-j}^p + \sum_{j=0}^{J} \lambda_j^G \boldsymbol{X}_{t-j}^G + \varepsilon_{2t} \tag{3}$$

where $gini_t$ is the Gini coefficient, fin_t^a denotes financial assets, fin_t^p financial payments, and $\boldsymbol{X}_t^G$ comprises other control variables. Precise definitions are given in Table 1. The α's, β's, γ's, δ's and λ's are parameters to be estimated, with superscript G referring to the Gini equation (3), and ε_{2t} being a strict white noise error term.

Blinder and Esaki (1978) introduced the approach of regressing the share of the i^{th} quintile of the income distribution on the overall unemployment rate. Here, rather than a "group" perspective on inequality of the i^{th} income share regressand, we have an aggregate perspective on inequality through regression (3). The Gini statistic captures inequality by measuring the allocation of income in (real) monetary terms to the various groups of agents. Therefore wages, benefits, rewards to capital or labour, and institutions that facilitate such rewards are legitimate candidate determinants in a Gini regression. On one hand, having unemployment as an additional driving force in the model carries the risk of blurring the results.[12] On the other, the effect of unemployment on inequality can be satisfactorily addressed by examining the relationship between the various income classes and the existence of unemployment à la Blinder and Esaki (for example, see Mocan, 1999).

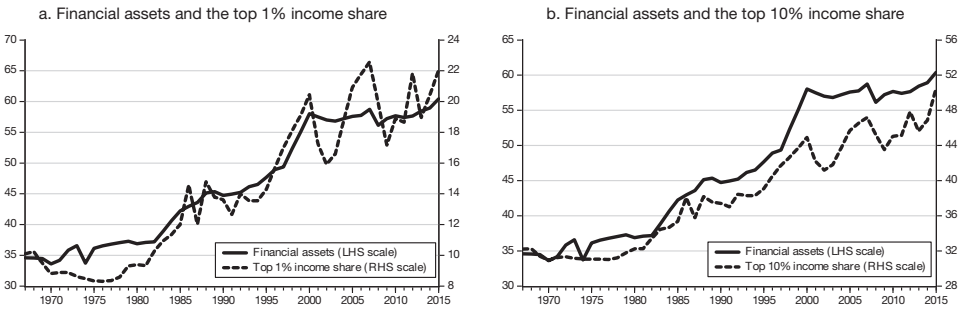
It is widely understood that higher corporate profits as a share of national income lead to (i) higher investment and (ii) the engagement of non-financial businesses in financial markets (e.g. due to fees income), i.e. the "financialisation" of industry (Stockhammer, 2004; Milberg and Schöller, 2009; Milberg and Winkler, 2010a, among others). Recognising the link between corporate profits and financialisation, the finding that financial assets and payments have a positive impact on the Gini coefficient implies that financialisation has a "direct" adverse effect on inequality.[13] This is the conclusion reached by Galbraith (2012) after showing that financial booms and busts drive the performance of the economy. The key argument is that financial deregulation, and the resulting growth in credit/indebtedness since the 1980s, have made a rising share of income connected to the financial sector in which debtors lose out relative to creditors.

Figure 3 is eloquent in showing the very close upward path followed by financial assets and the top 1 per cent income share. Hence, Model (3) not only captures the impact of the changing concentration of incomes (due to the falling labour share and the resulting increased income dispersion relative to capital rents), but also the within labour share rise in dispersion (due to the financialisation process).

[112] Consider, for example, the Gini equation of Checchi and García-Peñalosa (2010). As the negative and insignificant unemployment coefficient using OLS and IV (Table 4, p. 428) becomes positive and significant with 3SLS (Table 5, p. 431), it is hard to justify such a u-turn of the estimates on the grounds of endogeneity and cross-equation correlation alone.

[13] For an in-depth analysis of an intricate cobweb of institutional policy options that distort competition and accelerate economic concentration, and the systemic exploitation of inequality via novel and toxic forms of securitisation, see Hatgioannides and Karanassou (2011).

Figure 3: Financial Assets and the Top Income Shares



Sources: Financial Accounts of the United States (Federal Reserve System) and World Inequality Database.

IV ESTIMATED MODEL

Our econometric application follows the ARDL approach, also known as bounds testing. The ARDL procedure, developed by Pesaran and Shin (1999) and Pesaran *et al.* (2001), has the advantage of yielding consistent short- and long-run estimates irrespective of whether the regressors are I(1) or I(0). Since an ARDL equation can be re-parameterised in error-correction form and its long-run solution can be interpreted as the cointegrating vector of its variables, the ARDL procedure can be viewed as a rigorous alternative to the standard integration/cointegration techniques.

Once the ARDL selected dynamic forms of Models (2) and (3) have been estimated by Ordinary Least Squares (OLS), we regress them as a system of equations using Three Stage Least Squares (3SLS) and the Generalised Method of Moments (GMM). This allows dealing with potential endogeneity issues, as well as potential cross-equation error correlation.

4.1 Data

We use annual observations over the 1967-2015 period obtained from the US Bureau of Labor Statistics (for the non-farm business sector labour share); the Estimated Household Income Inequality (EHII) dataset developed by the University of Texas Inequality Project (UTIP) (for household income inequality); the US Federal Reserve (for dividends, interests, corporate profits and the capacity utilisation rate); the IMF Investment and Capital Stock Dataset (for private capital stock and output in the same units of measure, so as to compute the capital-output ratio or capital intensity); the Penn World Table 9.0 (for the depreciation rate, and the TFP index); and the OECD Economic Outlook (for the degree of trade openness, direct taxes on households, indirect taxes, and payroll taxes).

Table 1 describes the variables used in the selected specifications of the labour share and inequality equations.[14]

Table 1: Definitions of Variables

Δ	= Difference operator	τ^i	= Indirect taxes/GDP
ls	= Labour share; non-farm business sector	τ^h	= Direct taxes/GDP
		τ^b	= Direct taxes on business/GDP
$gini$	= Gini coefficient	τ^p	= Social security contributions/GDP
δ	= Depreciation rate	τ^T	= Total fiscal pressure = $\tau^i + \tau^h + \tau^b + \tau^p$
cur	= Capacity utilisation rate	fin^a	= Financial assets
ki	= Capital intensity		
with ki	= $\frac{private\ capital\ stock}{GDP}$	with fin^a	= $\frac{financial\ assets\ of\ NFCOs}{total\ assets\ of\ NFCOs}$
tfp	= Total factor productivity	fin^p	= Financial payments
tr	= Degree of trade openness	with fin^p	= $\frac{dividends + interests\ of\ NFCOs}{corporate\ profits\ of\ NFCOs}$
with tr	= $\frac{exports + imports\ (of\ goods\ and\ services)}{GDP}$		

Sources: US Bureau of Labor Statistics, Estimated Household Income Inequality (EHII) dataset developed by the University of Texas Inequality Project (UTIP), US Federal Reserve, IMF (Investment and Capital Stock Dataset), Penn World Table 9.0, OECD (Economic Outlook).
Note: All variables are defined as indices (*gini*, *tfp*) or ratios (the rest).

As labour share, we use the one for the non-farm business sector (plotted in Figures 1 and 2), which is a standard measure used in the literature (Elsby *et al.*, 2013). We follow Elsby *et al.* (2013) and focus just on the all-worker labour share, so that we get rid of the measurement issues surrounding the labour income of the self-employed. This is also the reason why Karabarbounis and Neiman (2014) focus on the labour share within the corporate sector. Note, also, that implicit in this measure is the average compensation per worker (and not the median wage) as defined in the National Income and Product Accounts (NIPA) tables. Hence, this measure includes not just wages and salaries but also non-cash benefits such as employer contributions to pension plans, to health insurance, and to social insurance programmes.

The time series data on income inequality is a Gini index computed over gross household income inequality. The EHII dataset has several advantages over

[14] Although we have worked with an extended dataset (including competitiveness, union density and benefits), we only report the estimates of variables entering the selected specifications.

alternative databases. First of all, it is a measure based on inequalities of industrial pay, which is less sensitive to changes in household structure than alternative measures, such as the household inequality index based on the Current Population Survey supplied by the US Census Bureau. Second, the EHII data do not contain the artificial jump that characterises the US Census Bureau series in the early 1990s, which is basically due to improved survey techniques (see Burkhauser *et al.*, 2011).[15]

Given that our measure of the labour share is restricted to the corporate sector, for consistency we take a measure of the capital-output ratio that excludes public capital stock. This ratio is computed in constant 2011 dollars, and evolves between 1.2 and 1.6 throughout our sample period (values closer to 3 would be expected if computed at current costs using the total stock of capital). Note that since only private capital stock is involved, this ratio may display more volatility than the ratio when including public capital stock.[16]

The degree of trade openness is a standard proxy of trade globalisation since it accounts for the amount of goods and services crossing the border either outwards or inwards relative to the output produced domestically. Together with the capital-output ratio (and the accompanying TFP variable) these are the key drivers of the falling labour share according to the mainstream literature reported earlier on. The influence of these mainstream factors is what we want to test when evaluated in the presence of variables that account for key aspects of the financialisation process.

Hence, regarding financialisation, we use two standard proxies, financial assets and financial payments whose trajectories are plotted in Figures 7a and 7b.[17] Financial assets are intangible assets such as bonds, stocks and bank deposits without intrinsic value unless they are converted into cash. As explained in Table 1, this is in the numerator of the ratio. In the denominator, we have the total amount of assets resulting from the addition of financial and fixed assets, always referring to the NFCOs, where fixed assets are those used to produce goods and services (buildings, trucks, computers, software, etc.). The rise in the ratio of financial assets over total assets reflects the fact that, starting in the 1980s, firms have given priority to financial investments over productive investments. Of course, the fact that financial assets have no intrinsic value unless they are converted into

[15] In addition, the UTIP-EHII database provides homogeneous long-time series (1963-2015) for 40 different countries ready to be used for researchers interested in international analyses. For a detailed methodological revision and comparison to alternative databases supplying inequality data, see Galbraith *et al.* (2014; 2015).

[16] The IMF relies on the standard perpetual inventory method to construct capital stocks series. Various databases (including the PWT) are used to compile a comprehensive series for public, private, and PPP investments, which are then transformed into "real cost" data at constant 2011 $US. Finally, they make assumptions on depreciation rates and on the initial capital stock series to derive the net "real cost" stocks (constant 2011 $US).

[17] For financial assets and payments, we have used the series supplied by the Board of Governors of the Federal Reserve System (total financial assets, net interest and net dividends of corporate business, and corporate profits). For fixed assets, we have used information from the Bureau of Economic Analysis (Table 6.1, Current-Cost Net Stock of Private Fixed Assets by Industry Group and Legal Form of Organization).

cash implies that what we are evaluating is not only an increase in the quantity held by firms of such assets through time relative to fixed assets, but also the time-varying market prices of such assets. However, even if they do not exist in the physical form, they are still written in the balance sheet to represent the value that is held by them. It is in this way that they end up affecting firms' decisions on investments and financial payments. Hence, financial payments – (net) interests and dividends as a percentage of pre-tax profits of non-financial corporations – accommodate the following two-sided role of financialisation. On one hand, the financial receipts crowd out the incentive of corporate management for real investment and, on the other, the financial pay-outs drain its funds (retained earnings) for real investment (González and Sala, 2014).

4.2 Results

Tables 2 and 3 present our estimates of the labour share and Gini equations, respectively, from 1968 to 2014. Equations E4, E5 and E6 in Tables 2 and 3 display the selected specifications of the model estimated by OLS, 3SLS and GMM to accommodate endogeneity and cross-equation correlation. These specifications have been selected by the optimal lag-length algorithm of the Schwartz information criterion, and pass the standard misspecification tests – for residual autocorrelation, normality, linearity, and heteroskedasticity – and the cusum and cusum squared structural stability tests.

4.2.1 Labour Share Estimates

The persistence coefficient is around 0.4, it is robust across estimation methods (Equations E4, E5, and E6 in Table 2), and also across specifications since it does not change substantially in the absence of the Gini index (E1), trade (E2), and technology-related variables (E3).

The coefficient on the Gini index is negative with a long-run elasticity around –1.0. This implies that in equilibrium, once solved for all dynamics embedded in the system, changes in the Gini index are fully reflected in the labour share. Capital intensity also exerts a negative influence on the labour share, of similar magnitude and implications than in Bentolila and Saint-Paul (2003).[18]

The rate of depreciation has a negative effect as expected, while the incidence of capacity utilisation is irrelevant.

Trade has the expected negative sign. Although its effect is robust across estimation methods and most specifications, it is interesting to observe that it becomes non-significant in the absence of technology-related variables (E3). This

[18] The long-run elasticity of the labour share with respect to capital intensity is –0.32, which is to be compared with the –0.23 found in Bentolila and Saint-Paul (2003). Following their model, this implies an elasticity of substitution between capital and labour (σ) of 1.06. Taking our estimate of –0.32, our sample period labour share average (55 per cent) and using the same labour demand elasticity with respect to the wage (–0.39), we find σ =1.07.

is probably reflecting the fact that globalisation and technology have progressed together and are joint drivers of the labour share. The same argument holds in terms of the estimated coefficient on TFP, which becomes also non-significant in the absence of trade (E2), but it is otherwise robust. The fact that technology has the opposite sign than capital intensity implies that it is labour-augmenting, rather than capital-augmenting (Bentolila and Saint-Paul, 2003).

Table 2: Labour Share Equation, 1968-2014

Dependent variable: Δls_t						
	OLS				*3SLS*	*GMM*
	[E1]	*[E2]*	*[E3]*	*[E4]*	*[E5]*	*[E6]*
c	0.188	0.381	0.333	0.387	0.665	0.715
	(0.1824)	(0.1897)**	(0.0982)***	(0.1827)**	(0.2236)***	(0.2091)***
ls_{t-1}	–0.289	–0.347	–0.364	–0.363	–0.412	–0.426
	(0.0984)***	(0.0895)***	(0.0818)***	(0.0866)***	(0.0776)***	(0.0863)***
$gini_{t-1}$		–0.550	–0.479	–0.512	–0.599	–0.662
		(0.1900)***	(0.1818)***	(0.1840)***	(0.1881)***	(0.2304)***
tr_{t-1}	–0.265		0.045	–0.231	–0.256	–0.276
	(0.1252)**		(0.411)	(0.1161)**	(0.1061)**	(0.1251)**
tfp_{t-1}	0.123	0.038		–.173	0.162	0.183
	(0.0813)	(0.0380)		(0.0771)	(0.0695)**	(0.0890)**
ki_t	–0.060	–0.024		–0.057	–0.121	–0.136
	(0.0476)	(0.0423)		(0.0439)	(0.0511)**	(0.0501)**
δ_t	–1.314	–0.542		–0.747	–2.217	–2.480
	(1.1395)	(1.1057)		(1.0699)	(1.3296)*	(1.3962)*
cur_t	0.003	0.022		–0.033	–0.057	–0.056
	(0.0514)	(0.0420)		(0.0490)	(0.0475)	(0.0660)
τ_t^h	0.702	0.519	0.541	0.680	0.637	0.693
	(0.1384)***	(0.1027)***	(0.0960)***	(0.1278)***	(0.1331)***	(0.1400)***
τ_t^b	–0.348	–0.585	–0.219	–0.610	–1.216	–1.397
	(0.4294)	(0.4222)	(0.2355)	(0.4068)	(0.5265)**	(0.5635)**
R^2	0.6301	0.6612	0.6255	0.6940	0.6595	0.6539
Std. e.	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
J-test					0.2418	
Obvs.	47	47	47	47	47	47

Source: Authors' analysis.

Notes: Standard errors of regression in parenthesis; *** p<0.01; ** p<0.05; * p<0.1; instruments: c, ls_{t-1}, ls_{t-2},.$gini_{t-1}$, ki_t, δ_t, cur_t, tr_{t-1}, tfp_{t-1}, τ_t^h, τ_t^b, τ_t^p, fin_t^a, fin_t^p, fin_{t-1}^a, fin_{t-1}^p.

As expected, direct taxes on households affect the wage-productivity gap positively, which signifies their role as a wage-push factor (recall that wages are also in the numerator of the labour share). Direct taxes on business have the expected negative sign on account of their negative influence on employment (which is in the numerator of the labour-income share ratio).

4.2.2 Gini Estimates

Looking at the Gini regressions in Table 3, we observe a larger level of persistence of around 0.7, which is robust across estimation methods since the same picture is obtained from the OLS, 3SLS and GMM estimations (E4, E5, and E6). Moreover, the estimated coefficients remain essentially unchanged in the absence of the labour share as explanatory variable, with some decrease in persistence as only noticeable change. There is a further substantial reduction when financial assets are not considered, whereas in the absence of financial payments it is the coefficient on fiscal pressure that reduces its size and statistical significance. Overall, the econometric analysis reflects the existence of a quite stable influence of the functional income distribution, financialisation, and fiscal pressure on income inequality.

The labour share evolution has a negative impact on the personal income distribution contemporaneously and in the long run. In addition, both financial assets and payments exert an upward pressure on inequality across all time horizons, while the negative effect of the change in financial payments (Δfin^p) has a lag structure. Finally, the higher the aggregate fiscal pressure is, the higher the inequality, which is to be interpreted as the low redistributive capacity, on average, of the US tax system.

4.2.3 Granger Causality and Fitted Values

Table 4 presents pairwise Granger Causality tests and correlation coefficients between the scrutinised variables. Tests results are based on three lags since the test exploits the relevance of all past information.

A first important result is that we cannot reject that the Gini does not Granger cause the labour share and vice versa, which suggests that Granger causality runs both ways. In addition, there is evidence that causality runs in general one way, from the exogenous variables to the labour share and the Gini index, and not the other way.[19] The exceptions are δ (with no evidence of Granger causality in either direction) and *ki* (in which case it is clear that causality runs from *ki* to *ls*, but the fact that causality could also run the other way around can only be rejected at a 1 per cent critical value).

[19] We cannot reject the hypothesis that *cur*, τ^h, and τ^b does not Granger cause *ls*, but we do reject the hypothesis that *ls* does not Granger cause *cur*, τ^h and τ^b (recall that *tr* and *tfp* also enter this equation, but with one lag). The same holds from τ^T, fin^a, fin^p, and *cur* with respect to *gini*.

Table 3: Gini Equation, 1968-2014

Dependent variable: $\Delta gini_t$						
			OLS		*3SLS*	*GMM*
	[E1]	*[E2]*	*[E3]*	*[E4]*	*[E5]*	*[E6]*
c	0.211	0.285	0.138	0.327	0.340	0.373
	(0.0404)***	(0.0581)***	(0.0567)**	(0.0636)***	(0.0786)***	(0.0696)***
$gini_{t-1}$	–0.502	–0.541	–0.204	–0.653	–0.675	–0.720
	(0.1005)***	(0.1031)***	(0.0662)***	(0.1159)***	(0.1358)***	(0.1223)***
ls_t		–0.096	–0.069	–0.131	–0.138	–0.153
		(0.0547)*	(0.0671)	(0.0571)**	(0.0696)**	(0.0619)**
τ_t^T	0.093	0.085	0.231	0.129	0.171	0.262
	(0.0878)	(0.0720)	(0.0990)**	(0.0849)	(0.0924)*	(0.0989)***
fin_t^a	0.075	0.075		0.086	0.090	0.089
	(0.0200)***	(0.0190)***		(0.0196)***	(0.0177)***	(0.0199)***
fin_t^p	0.004		0.002	0.008	0.006	0.004
	(0.0047)		(0.0056)	(0.0048)	(0.0038)	(0.0050)
Δfin_t^p	–0.007		–0.008	–0.008	–0.009	–0.007
	(0.0050)		(0.0058)	(0.0048)*	(0.0039)**	(0.0046)
Δfin_{t-1}^p	–0.007		–0.003	–0.009	–0.010	–0.012
	(0.0051)		(0.0057)	(0.0049)*	(0.0054)*	(0.0049)**
cur_t	–0.093	–0.096	–0.100	–0.096	–0.111	–0.147
	(0.0241)***	(0.0183)***	(0.0278)***	(0.0229)***	(0.0296)***	(0.0314)***
R^2	0.5482	0.5413	0.4011	0.6030	0.5915	0.5496
Std. e.	0.003	0.003	0.004	0.003	0.003	0.003
J-test					0.2418	
Obvs.	47	47	47	47	47	47

Source: Authors' analysis.

Notes: Standard errors of regression in parenthesis; *** p<0.01; ** p<0.05; * p<0.1; instruments: c, ls_{t-1}, ls_{t-2}, $gini_{t-1}$, ki_t, δ_t, cur_t, tr_{t-1}, tfp_{t-1}, τ_t^h, τ_t^b, τ_t^p, fin_t^a, fin_t^p, fin_{t-1}^a, fin_{t-1}^p.

Of course, the statement "Granger causes" does not necessarily imply that it is the effect or the result of a particular variable. The results in Table 4 just prove that the exogenous variables help in predicting the trajectories of the labour share and the Gini coefficient. They also uncover a two-way causality between these two (endogenous) variables, which reinforce our strategy of system estimation.

In addition, Figure 4 shows that the fitted values of the selected two-equation model follow closely the time paths of the dependent variables.

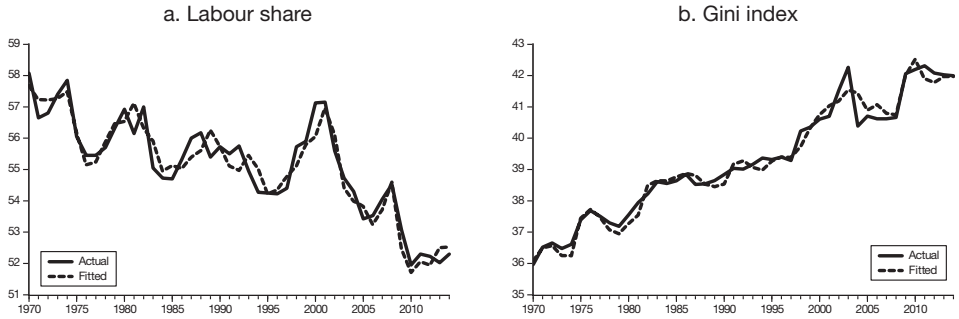
Table 4: Pairwise Granger Causality Tests – Lags: 3, 1968-2015

Labour share equation H_0:	*F-Stat.*	*Prob.*	*Gini equation* H_0:	*F-Stat.*	*Prob.*
gini does not Granger Cause *ls*	3.5726	0.0219	*ls* does not Granger Cause *gini*	3.4492	0.0251
ls does not Granger Cause *gini*	3.4492	0.0251	*gini* does not Granger Cause *ls*	3.5726	0.0219
Correlation coefficient $= \underset{[0.0000]***}{-0.7784}$			Correlation coefficient $= \underset{[0.0000]***}{-0.7784}$		
ki does not Granger Cause *ls*	7.3471	0.0005	τ^T does not Granger Cause *gini*	6.7392	0.0008
ls does not Granger Cause *ki*	3.0249	0.0403	*gini* does not Granger Cause τ^T	0.0687	0.9763
Correlation coefficient $= \underset{[0.5523]}{0.0879}$			Correlation coefficient $= \underset{[0.6715]}{-0.0628}$		
δ does not Granger Cause *ls*	0.4409	0.7250	fin^a does not Granger Cause *gini*	2.7744	0.0534
ls does not Granger Cause δ	0.5224	0.6694	*gini* does not Granger Cause fin^a	1.2959	0.2887
Correlation coefficient $= \underset{[0.0270]**}{0.3226}$			Correlation coefficient $= \underset{[0.0000]***}{0.9527}$		
cur does not Granger Cause *ls*	9.6583	0.0001	fin^p does not Granger Cause *gini*	4.4082	0.0089
ls does not Granger Cause *cur*	2.1930	0.1043	*gini* does not Granger Cause fin^p	1.4081	0.2541
Correlation coefficient $= \underset{[0.0007]***}{0.4706}$			Correlation coefficient $= \underset{[0.0010]***}{0.4601}$		
τ^h does not Granger Cause *ls*	4.4558	0.0085	*cur* does not Granger Cause *gini*	5.3096	0.0036
ls does not Granger Cause τ^h	1.2004	0.3217	*gini* does not Granger Cause *cur*	1.3260	0.2798
Correlation coefficient $= \underset{[0.0577]}{0.2758}$			Correlation coefficient $= \underset{[0.0000]**}{-0.6482}$		
τ^b does not Granger Cause *ls*	6.3210	0.0013			
ls does not Granger Cause τ^b	1.3384	0.2751			
Correlation coefficient $= \underset{[0.0959]}{0.2431}$					

Source: Authors' analysis.

Notes: The labour share equation features in addition *tr* and *tfp*, which enter the equation lagged once; probabilities in square brackets.

Figure 4: Actual and Fitted Values



Source: Authors' analysis based on the estimated models.

V EVALUATING THE DISTRIBUTIONAL CONSEQUENCES

Having established the statistical significance and adequacy of our model, we unveil its economic significance by evaluating the dynamic contributions of the shocks (or impulses) to the time paths of the labour share and inequality.[20] "Shocks" are given shape in the chain reaction approach by the changes in the exogenous variables, rather than the residuals of the estimated model.[21] In this way, the impulse response functions (IRFs) of the system identify the impact of the actual changes in an exogenous factor on the evolution of the endogenous variables over a specific sample interval.[22]

In what follows we measure the distributional consequences of technological progress and trade globalisation, the financialisation process, and taxes with counterfactual simulations. In particular, the estimated system (Equations E6 in Tables 2 and 3) is simulated by fixing the exogenous variables belonging to each of these macroeconomic driving forces at their values in 1970. We choose 1970 because Kennedy's governments have ended and there is a structural change in the trajectories of the labour share (which peaks in 1970) and income inequality (which bottoms in 1969). In this way, we are able to take good account of the impact of the new Republican governments (Nixon and Ford), the oil price shocks and the new era of deregulation and market liberalisation that followed.

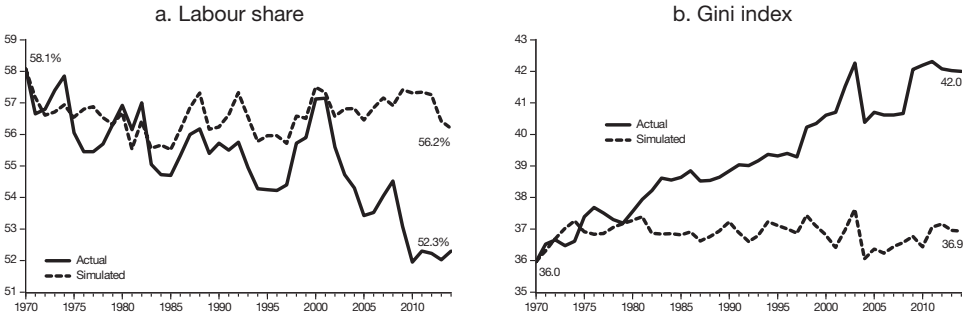
[20] The important point made by McCloskey and Ziliak (1996) that economic (or substantive) significance and statistical significance are not the same thing is thus acknowledged.

[21] The point raised by Blanchard (2009, p. 220) on the issue is notable: "The use of 'shocks' is fraught with philosophical, but also with practical, difficulties: Technological shocks, animal spirits, changes in perceived uncertainty, etc. all have deeper causes, which themselves have even deeper causes, and so on".

[22] The Appendix in Karanassou and Sala (2012) provides an analytic illustration of the dynamic accounting of contributions in the bivariate case under the static and AR(1) scenarios of the IRFs.

The labour share fell from 58.1 per cent in 1970 to 52.3 per cent in 2014, while the Gini index increased from 36.0 to 42.0 (continuous lines in Figures 5a and 5b). When we fix the system's exogenous variables at their 1970 values, the simulated path of both endogenous variables is relatively flat (dotted lines in Figures 5a and 5b). In the case of the labour share, the value reached in 2014 is 56.2 per cent, which implies that 1.9 percentage points (pp) of the labour share fall are not accounted for by the evolution of the exogenous variables (precisely because their values have been unchanged at the start of the simulation period). In the case of the Gini index, the value in 2014 is 36.9 so that only 0.9 Gini points are not accounted for by the trajectories of the exogenous variables. In other words, our system's estimates account for 3.9 percentage points out of the 5.8 percentage point fall in the labour share (67 per cent), and 5.1 out of the 6.0 point increase in the Gini coefficient (85 per cent).

Figure 5: Joint Contributions of all Exogenous Variables

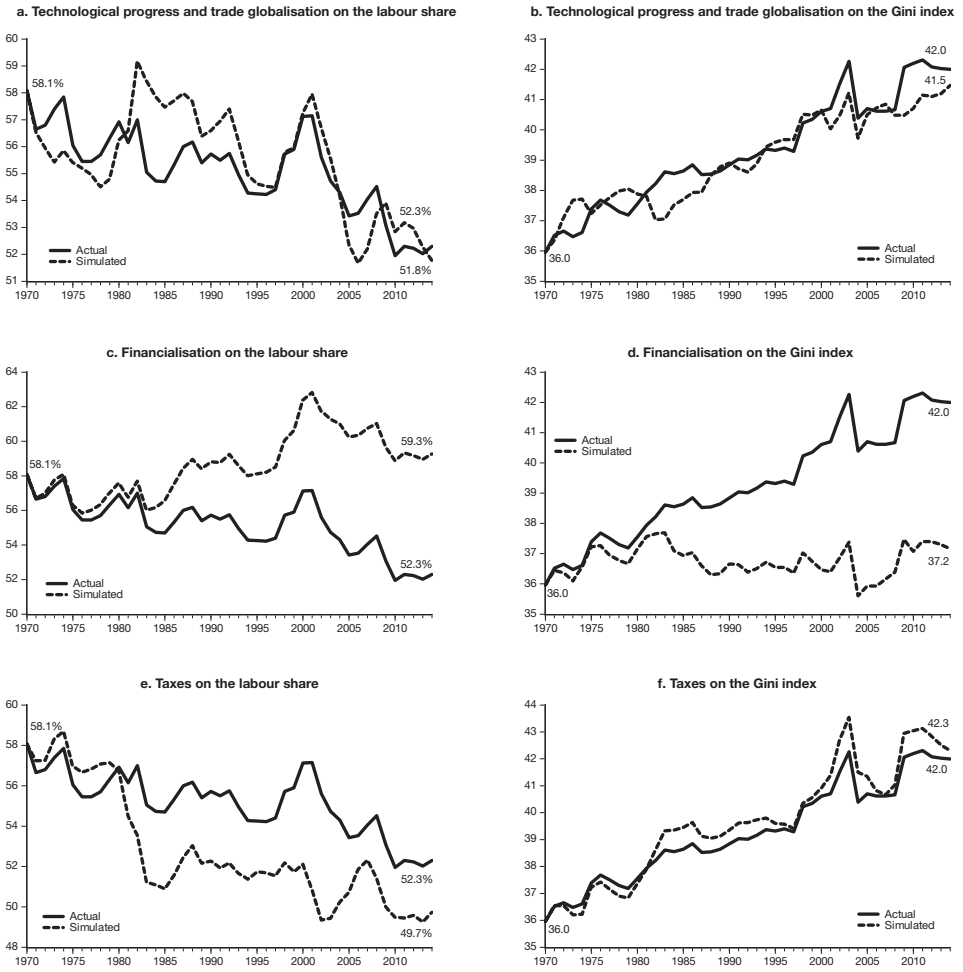


Source: Authors' analysis based on the estimated models.

These overall accounts, resulting from our empirical models and counterfactual simulations, can be decomposed so as to quantify the specific contribution of the technology and trade-related variables (*tfp*, *ki*, δ, and *cur*, on one side; and *tr*, on the other) as shown in Figures 6a and 6b; financialisation (fin^a and fin^p) as shown in Figures 6c and 6d; and taxes (τ^h, τ^b, and τ^T) as shown in Figures 6e and 6f.

Technological progress and trade globalisation have counterbalancing impacts both on the labour share and Gini index. Some of the variables accounting for these two phenomena may exert a strong influence on their own, but their joint net effect is to push the labour share and the Gini index upwards by 0.5 percentage points. This accounts for less than 10 per cent of the actual change in each endogenous variable. It can also be seen (Figure 6a) that 1980-1997 is the period in which technological progress and trade globalisation exert a stronger downward influence on the labour share (note that the simulated – dotted – line shows that had this set of exogenous variables kept its original value, the labour share in those years would have been higher by several percentage points).

Figure 6: Distributional Impact of Macro Drivers



Source: Authors' analysis based on the estimated models.

Our third factor is the financialisation process, as reflected in the growing relevance of financial assets and financial payments in the non-financial sector (Figures 7a and 7b). Our results reveal far-reaching implications of this process. First, there is a strong contribution of this process to the fall of the labour share. This contribution starts to be relevant in the early 1980s and becomes progressively relevant until reaching 7 percentage points (Figure 6c). That is, keeping constant the values of the variables reflecting the financialisation process (and letting all the other variables follow their actual trajectories), the labour share would have been 59.3 per cent in 2014, rather than the actual 52.3 per cent. These 7 percentage points are the contribution of the financialisation process to the fall in the labour share.

Regarding the Gini index, the same counterfactual analysis reveals that financialisation accounts for 4.8 points increase, which implies that in the absence of such process, and other things equal, the Gini index in 2014 would have achieved 37.2 rather than 42.0 points (Figure 6d). Both simulations provide a sound indication of the strong distributional impact caused by the leakage of productive investment triggered by the development and growth of the financial sector in the US.

Of course, like in the case of trade globalisation, we should not evaluate the growing relevance of the financial sector in isolation from technological progress. The connection between the two, and more precisely the crowding out effects of the financialisation process over productive investment, are already documented in previous literature and shown to affect the product and labour markets (González and Sala, 2014). Our choice to group the impact of technology with globalisation, however, is just to be able to outline the strong contribution of the financialisation process to the fall of the labour share and the rise of the Gini index. Of course, the three phenomena are intimately intertwined and should be all taken together, but in that case the overall contribution is dominated by the financialisation process given that the joint net effects of technological progress and trade globalisation are small.

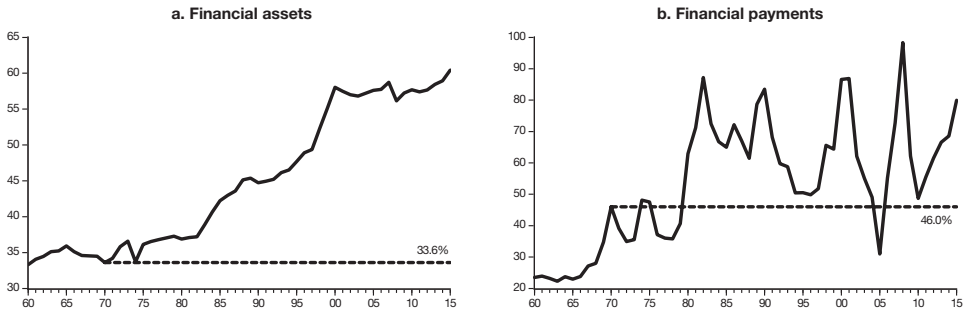
In addition to the previous findings, the tax system accounts for a 2.6 percentage point rise in the labour share and a fall of 0.3 Gini points (Figures 6e and 6f). This result shows that the tax structure has some capacity to redistribute rents towards the labour factor, and counterbalance, in this way, the downward influence of technological progress, trade globalisation and financialisation. On the contrary, the tax structure is relatively innocuous in terms of the Gini coefficient, which points to public expenditures as the mechanism through which personal income redistribution takes place more intensively. This last issue has been analysed at length and lies beyond the scope of this paper (Schwartz and Ter-Minassian, 2000; O'Dea and Preston, 2012).

Our findings call for a reassessment of the role played by the financialisation process in shaping the functional and personal income distributions. In Section II, we outlined some studies that uncover its downward influence on the labour share. These works, however, do not consider the influence of the growing stock of financial assets over the total stock of assets owned by the NFCOs, which we do in connection with the resulting cyclical evolution of financial payments. Both elements characterising the financialisation process are detrimental to labour rents (they push the labour share down) and personal income equality (they push the Gini index up). These findings are consistent with Galbraith (2012), who argues that the massive rise of inequality in the global economy between 1980 and 2000 is a fundamental reflection of the concentration of income among the top rich and the financial fragility of the rest.

Hence, it is not only in view of the problems arising from the burst of the financial bubble that led to the Global Financial Crisis that financial flows should

be put back under control, it is also that they contribute to exacerbate distributional problems that could otherwise be tackled in a much more efficient way. Of course, for such control to be achieved, the scope of financial institutions and corporate strategies needs to be rethought. Limits could be envisaged so as to keep the share of income obtained from financial activity within some maximum levels. This would help to brake the leakage for productive investment from the saving-investment behaviour of both firms and households, and would also help in blocking growing inequality on account of the asymmetric distribution of the returns from the financial sector and financial activity.

Figure 7: A Bird's Eye View of the US Financialisation Process



Source: Financial Accounts of the United States (Federal Reserve System).

González and Sala (2014) showed the unemployment impact of the financialisation process. In this paper, we have shown its distributional impact. Taken together, these studies point to the possibility of reducing the inequality-unemployment trade-off by bringing back some regulation into the financial industry. Some degree of capital flows control, plus some taxation on foreign exchange transactions and even on domestic assets and security transactions, would contribute to regain control over financial activity. This would likely have positive effects on real investments (as opposed to financial investments) and, as we have shown, on the functional and personal income distributions, not to say on business cycle volatility and the development of financial and housing bubbles.

VI CONCLUSIONS

This paper explored the role of the wage-productivity gap and the Gini index in the income distribution nexus. The determining factors of the labour share and inequality were jointly identified with a two-equation model, where (i) the personal income distribution mainly depends on the labour share and financialisation, and (ii) the functional income distribution is mainly driven by inequality, technology and globalisation.

Estimating the ARDL selected specifications of the system with GMM over the 1968-2014 period in the US, we documented (i) the positive impact of financial assets and payments and the negative impact of the labour share on inequality; and (ii) the negative effect of inequality, capital intensity, and trade on the labour share. Measuring the chain reactions of the (endogenous) labour share and Gini variables to the shocks in the system, we evaluated the distributional consequences of technological progress and globalisation, financialisation and the tax system.

We showed that the empirical model is able to fit accurately the actual evolution of the endogenous variables. In addition, our counterfactual simulations indicated that the model is able to account for 67 per cent of the variation of the labour income share and 85 per cent of the variation in the Gini coefficient. When decomposing this account so as to explore the individual contribution to this variation of major macroeconomic driving forces – technology and trade globalisation, financialisation and taxes – we unveiled the role of financialisation as the most significant contributor to the fall in the labour share and the rise in personal inequality. We also showed that the influence of financialisation is two-fold. On the one side, from the structural increase in financial assets (which move in parallel with the top 1 per cent income share). On the other side, from financial payments, which display a volatile behaviour and may even become a relief for inequality in bad times.

Given our results, the transmission channel of financialisation to the functional income distribution needs further understanding, since capital intensity and financialisation seem to act at times as communicating vessels. During the 1980s, for example, capital intensity decreased in full coincidence with the financialisation process taking off, resulting in labour share counterbalancing effects. This is an important avenue for future research, which is connected to Stockhammer's (2017) claim that a more detailed analysis of the mechanisms by which financialisation affects income distribution is needed. This study seeks to be a stepping-stone towards this aim.

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